



Transportation Guidelines: Crosswalk Design Standards

Purpose:

The Amherst Transportation Advisory Committee (TAC) has been tasked to evaluate and establish crosswalk design standards that will encourage safety, accessibility and consistency. This need was identified in the Transportation Plan (2015) and specifically requested by Town officials.

Definitions:

A crosswalk is a portion of a roadway at an intersection or elsewhere designated for pedestrian crossing: whether marked or unmarked, flush or raised. Crosswalks are a critical element of the transportation network by accommodating all pedestrian users, regardless of age or mobility, in crossing a roadway. They also warn drivers of possible conflicts and to prepare to yield to someone entering the crosswalk. Marked crosswalks are any portion of the road outlined by painted markings or a different texture such as imprint, brick, concrete or pavers. Raised crosswalks are elevated above roadway pavement in the form of an elongated speed hump with a flat section in the middle and at-grade with adjacent sidewalks. An unsignalized approach refers to when a crosswalk is not controlled with traffic signals. An uncontrolled approach is when a crosswalk is without any regulatory (i.e.: STOP or YIELD) signs or traffic signals.

Evaluation Process:

The evaluation began with the observation of current crosswalks downtown, around the town and on the higher education campuses. Crosswalk discussion included previous history, existing conditions, safety issues, diversity of users and varying designs and materials. Many of the older installations were noted to be in need of repair with issues including material failures and difficult maintenance.



Examples of previous crosswalk design standards on Kellogg Ave. & N. Pleasant St.

The TAC was educated on the regulatory guidelines for crosswalk markings and signage specifically Chapter 3 of the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD), Chapter 6 and Addendum of the MassDOT Design Guidelines, and guidance from the National Association of City Transportation Officials (NACTO). Criteria for crosswalk consideration were established as follows:

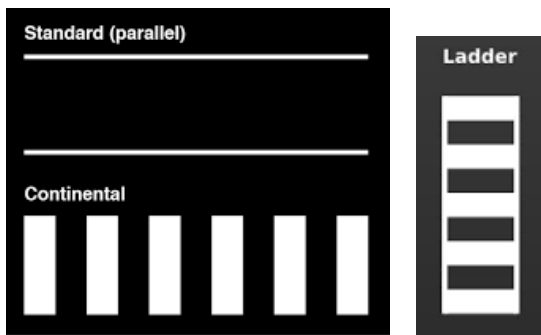
- Safety
- Visibility & Delineation
- Design & Aesthetics including for ADA users
- Durability of Materials
- Ease of Maintenance/Repair
- Construction & Maintenance Costs
- Frequency of Use (Vehicles and Pedestrians)

In addition, various crosswalk construction and marking materials were studied against the criteria for strengths and weaknesses. Particular attention was put into crosswalk trends and best practices being utilized in other historic and/or “college” towns.

Town-Wide Crosswalk Design Standards:

For Town-wide use the following patterns, materials, width, signage and lighting will be used on all Amherst roadway crosswalks:

1. Pattern: The pattern will be the white Standard, Continental and Ladder.



Examples of acceptable patterns

2. Materials: Crosswalks will use one of the following markings materials: water based traffic paint, thermoplastic material and/or epoxy paint.

3. Width (between Standard lines): Crosswalks will be a minimum of 6' with a maximum width of 20'. The goal is to use the widest feasible width.

4. Signage: Will meet the standards and specifications of the MUTCD & MassDOT.

a. At Unsignalized/Uncontrolled Approaches

- Pedestrian in Crosswalk Sign (W11-2) with
- Downward Arrow Plaque (W16-7p)



Example of W11-2 & W16-7p

5. Lighting: Crosswalks shall have sufficient overhead lighting and meet FHWA & MassDOT Lighting requirements.



Examples of Amherst Cobra Streetlights

Optional Enhancements:

A Downtown Crosswalks Options: All standards previously listed under Town Wide Use may be utilized downtown including the following:

1. Pattern: Decorative Running Bond Brick with White Standard and Continental

2. Material: Thermoplastic or Epoxy



Examples: Running Bond Brick Pattern with white Standard & Continental Lines.

3. Width: Crosswalks will be a minimum of 6' with a maximum width of 20'. The goal is to use the widest feasible width.

4. Signage: State Law Yield to Pedestrians Crossing Sign (R1-6)



5. Lighting:

Adequate lighting helps to warn oncoming drivers of pedestrians crossing the street and also helps guide pedestrians across the street at night. The goal is to provide focused downcast lighting for the entire length and width of the crosswalk.

a. Downcast Street Light



Example of new downtown Amherst Streetlight

b. Lighting Pedestrian Crossing Treatments such as Flashing Bollards with pedestrian control buttons



Example of Flashing Bollards at Amherst College

6. Raised Crosswalk/Intersections used at unsignalized/uncontrolled approaches



Example of Jones Library Raised Crosswalk installed in 2016

B. Additional Pedestrian Safety Area Options: Areas possibly utilizing these enhancement tools include village centers, school zones, significantly used pedestrian crossings and other higher speed limit areas as determined by an engineering study.

1. – 3. Same as Town-wide standards

4. Signage: State Law Yield to Pedestrians Crossing Sign (R1-6)

5. Lighting:

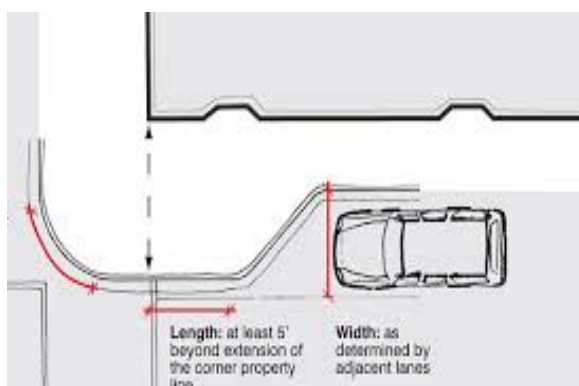
- a. Additional Downcast Street Lighting where needed
- b. Lighting Pedestrian Crossing Treatments including Rectangular Rapid Flashing Beacon (RRFB) and Pedestrian Hybrid Beacon (HAWK)



Pine Street RRFB, RRFB close up, and example of a HAWK Beacon

6. Raised Crosswalk/ Intersections used at unsignalized/uncontrolled approaches

7. Bump-Outs: A curb extension primarily used to extend the sidewalk to reduce the crosswalk length and increase pedestrian/vehicle visibility.



Examples: Bump-Outs at Jones Library and drawing of at an intersection

8. Medians or Pedestrian Safety Islands: The reserved area in a roadway that separates opposing lanes of traffic which acts to slow traffic and in some cases reduce pedestrian's exposure to vehicles.



Examples: Median at Pine Street and Pedestrian Islands at Eastman Roundabout

Notes:

1. A DPW engineering study is required to determine if the criteria and warrants are satisfied for the installation of a crosswalk at a particular location, the level of marking justified, and inclusion of optional enhancements. Design, installation and enhancements will follow MUTCD and MassDOT Design Guidelines.
2. Existing crosswalks will be reviewed periodically to ensure they meet the crosswalk criteria established in these guidelines.

TAC Recommendation: September 12, 2017

SB Approval: _____

Summary Table: Amherst Crosswalk Design Standards

	Town-Wide Standards	Optional Enhancements [^] :	
		A. Downtown:	B. Town-wide:
1. Pattern	White Standard, Continental & Ladder	Decorative Running Bond Brick with White Standard & Continental	
2. Materials	Water based paint Thermoplastic Epoxy paint	Thermoplastic Epoxy	
3. Width	6'-20' (widest feasible)		
4. Signage	Comply with MUTCD* & MassDOT At unsignalized/uncontrolled approaches*: Pedestrian in Crosswalk sign (W11-2) with Downward Arrow Plaque (W16-7p)	Yield Pedestrian Crossing Sign (R1-6)	Yield to Pedestrians Crossing Sign (R1-6)
5. Lighting	Adequate focused downcast lighting	Lighting Pedestrian Crossing Treatments (e.g.: Flashing Bollards)	Lighting Pedestrian Crossing Treatments (e.g.: Flashing Bollards, RRFB & HAWK)*
6. Raised Crosswalks		Raised Crosswalk at unsignalized/uncontrolled approaches*	Raised Crosswalk at unsignalized/uncontrolled approaches*
7. Bump-outs			Bump-outs
8. Medians & Pedestrian Islands			Medians & Pedestrian Islands

Refer to Crosswalk Design Standards document for additional details.

[^]Optional enhancements will be utilized as determined by an engineering study.

*MUTCD: Manual on Uniform Traffic Control Devices by the Federal Highway Administration

*unsignalized approach: when a crosswalk is not controlled with traffic signals

*uncontrolled approach: when a crosswalk is without any regulatory (i.e.: STOP or YIELD) signs or traffic signals.

*RRFB: Rectangular Rapid Flashing Beacon

*HAWK: Pedestrian Hybrid Beacon